

ABSTRACT

Provided is a method of fabrication of a blooming control structure for an imager. The structure is produced in a semiconductor substrate in which is configured an electrical charge collection region. The electrical charge collection region is configured to accumulate electrical charge that is photogenerated in the substrate, up to a characteristic charge collection capacity. A blooming drain region is configured in the substrate laterally spaced from the charge collection region. The blooming drain region includes an extended path of a conductivity type and level that are selected for conducting charge in excess of the characteristic charge collection capacity away from the charge collection region. A blooming barrier region is configured in the substrate to be adjacent to and laterally spacing the charge collection and blooming drain regions by a blooming barrier width. This barrier width corresponds to an acute blooming barrier impurity implantation angle with the substrate. The blooming barrier region is of a conductivity type and level that is selected based on the blooming barrier width to produce a corresponding electrical potential barrier between the charge collection and blooming drain regions. The blooming barrier regions of the structure are very precisely defined by the selected acute blooming barrier impurity implantation angle, and optionally in addition by a rotation of the blooming barrier impurity implantation, as well as a non-vertical sidewall profile of the an impurity implantation masking layer.